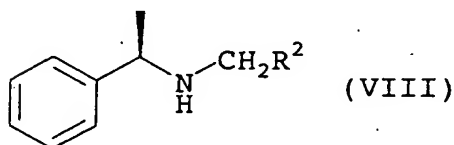


WHAT IS CLAIMED IS

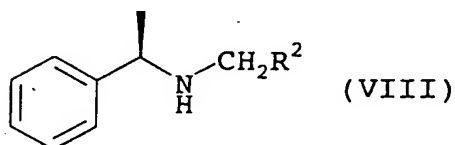
1. A production method of (R)-3-hydroxy-3-(2-phenylethyl)hexanoic acid, which comprises optically resolving racemic 3-hydroxy-3-(2-phenylethyl)hexanoic acid using an
5 optically active amine of the formula (VIII)



wherein R^2 is 3,4-dimethoxyphenyl or 2-chlorophenyl.

2. The production method of claim 1, wherein a salt of (R)-3-
10 hydroxy-3-(2-phenylethyl)hexanoic acid with the optically active amine (VIII) is crystallized in one or more kinds of solvents selected from ethyl acetate, methanol, isopropanol, ethanol, acetonitrile, methyl isobutyl ketone, acetone, methyl ethyl ketone, diisopropyl ether, dimethoxyethane and
15 tetrahydrofuran, wherein the solvent optionally further contains water.
3. The production method of claim 1, wherein the optically active amine (VIII) is obtained by condensing (R)-1-
20 phenylethylamine with a compound of the formula R^2 -CHO (VIII-i) wherein R^2 is as defined above, and reducing the resulting compound.
4. The production method of claim 1, which comprises recovering
25 the optically active amine (VIII) after optical resolution.
5. A production method of (R)-3-hydroxy-3-(2-phenylethyl)hexanoic acid, which comprises hydrolyzing a racemic 3-hydroxy-3-(2-phenylethyl)hexanoic acid ester to
30 produce racemic 3-hydroxy-3-(2-phenylethyl)hexanoic acid, extracting the compound with one or more kinds of solvents

selected from ethyl acetate, methyl isobutyl ketone, methyl ethyl ketone, diisopropyl ether and tetrahydrofuran, and optically resolving the compound by crystallizing a salt of (R)-3-hydroxy-3-(2-phenylethyl)hexanoic acid with an optically
5 active amine of the formula (VIII)



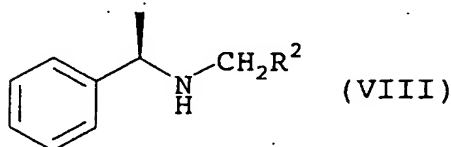
wherein R^2 is 3,4-dimethoxyphenyl or 2-chlorophenyl, using a part or the entirety left of the extraction solvent as a solvent for optical resolution.

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6. The production method of claim 5, wherein the optically active amine (VIII) is produced by condensing (R)-1-phenylethylamine with a compound of the formula R^2 -CHO (VIII-i) wherein R^2 is as defined above, and reducing the resulting
15 compound.

7. The production method of claim 5, which comprises recovering the optically active amine (VIII) after optical resolution.

20 8. A production method of (R)-3-hydroxy-3-(2-phenylethyl)hexanoic acid, which comprises reacting magnesium, a haloacetic acid ester and 1-phenyl-3-hexanone to produce racemic 3-hydroxy-3-(2-phenylethyl)hexanoic acid ester, hydrolyzing this compound to give racemic 3-hydroxy-3-(2-phenylethyl)hexanoic acid, and optically resolving this
25 compound using the optically active amine of the formula (VIII)



wherein R^2 is 3,4-dimethoxyphenyl or 2-chlorophenyl.

9. The production method of claim 8, wherein the haloacetic acid ester is a chloroacetic acid ester.

10. The production method of claim 8, wherein a salt of the
5 (R)-3-hydroxy-3-(2-phenylethyl)hexanoic acid with the optically active amine (VIII) is crystallized in one or more kinds of solvents selected from ethyl acetate, methanol, isopropanol, ethanol, acetonitrile, methyl isobutyl ketone, acetone, methyl ethyl ketone, diisopropyl ether, dimethoxyethane and
10 tetrahydrofuran, wherein the solvent optionally further contains water.

11. The production method of claim 8, wherein after producing the racemic 3-hydroxy-3-(2-phenylethyl)hexanoic acid, the
15 compound is extracted with one or more kinds of solvents selected from ethyl acetate, methyl isobutyl ketone, methyl ethyl ketone, diisopropyl ether and tetrahydrofuran, and optically resolved by crystallizing the salt of (R)-3-hydroxy-3-(2-phenylethyl)hexanoic acid with an optically active amine
20 (VIII) using a part or the entirety left of the extraction solvent as a solvent for optical resolution.

12. The production method of claim 8, wherein the optically active amine (VIII) is obtained by condensing (R)-1-
25 phenylethylamine with a compound of the formula $R^2\text{-CHO}$ (VIII-i) wherein R^2 is as defined above, and reducing the resulting compound.

13. The production method of claim 8, which comprises
30 recovering the optically active amine (VIII) after optical resolution.

14. The production method of claim 8, wherein magnesium is

activated.

15. The production method of claim 14, wherein magnesium is activated with chlorosilanes and halogenated hydrocarbon.

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16. The production method of claim 15, wherein the chlorosilanes is selected from the group consisting of chlorotrimethylsilane, dichlorodimethylsilane, methyltrichlorosilane and tetrachlorosilane.

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17. The production method of claim 15, wherein the halogenated hydrocarbon is selected from the group consisting of allyl bromide, iodomethane, iodoethane, benzyl bromide, 1,2-diiodoethane and 1,2-dibromoethane.

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18. The production method of claim 8, wherein 1-phenyl-3-hexanone is obtained by condensing benzaldehyde with 2-pentanone in the presence of a base to give propyl styryl ketone, and reducing the obtained propyl styryl ketone.

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19. A production method of a racemic 3-hydroxy-3-(2-phenylethyl)hexanoic acid ester, which comprises reacting magnesium, haloacetic acid ester and 1-phenyl-3-hexanone.

25 20. The production method of claim 19, wherein the haloacetic acid ester is a chloroacetic acid ester.

21. The production method of claim 19, wherein magnesium is activated.

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22. The production method of claim 21, wherein magnesium is activated with chlorosilanes and halogenated hydrocarbon.

23. The production method of claim 22, wherein chlorosilanes is selected from the group consisting of chlorotrimethylsilane, dichlorodimethylsilane, methyltrichlorosilane and tetrachlorosilane.

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24. The production method of claim 22, wherein halogenated hydrocarbon is selected from the group consisting of allyl bromide, iodomethane, iodoethane, benzyl bromide, 1,2-diiodoethane and 1,2-dibromoethane.

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25. The production method of claim 19, wherein 1-phenyl-3-hexanone is obtained by condensing benzaldehyde with 2-pentanone in the presence of a base to give propyl styryl ketone, and reducing the obtained propyl styryl ketone.

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